The NASA Lidar Access System (NLAS)

A NASA ROSES ACCESS-funded project

S.J.S. Khalsa[1], T. Haran[1], C. Meertens[2], J. McWhirter[2], C. Baru[3], C. Crosby[3], D. Hardin[4], B. Blair[4]

[1]NSIDC/CU, [2]UNAVCO, [3]SDSC/UCSD, [4]NASA/GSFC

Overview

NLAS provides access to existing LiDAR data sources hosted at NSIDC, GSFC, UNAVCO, and the San Diego Supercomputing Center (SDSC). Included are satellite LiDAR data from ICESat, high altitude airborne LiDAR data from LVIS, and low altitude airborne LiDAR from the UNAVCO, and SDSC's extensive Earthscope catalog. Uniform access to these data is through the OpenTopography Portal, which also provides on-demand processing capabilities for user-specified topographic data products. The OpenTopography portal interfaces with the NASA data archives at UNAVCO (for LVIS data) and NSIDC (for ICESat data) via open web services (ATOM capabilities and RESTful service invocation), giving these data enhanced exposure and significantly streamlining user access.

Project Objectives

- Develop enhanced quality metrics for NASA lidar data
- Define data encoding conventions for lidar point cloud and waveform data
- Provide an integrated system for web services-based access to distributed archives via the OpenTopography Portal
- Establish standard web service layers giving access to ICESat/GLAS at NSIDC and LVIS data at GSFC

Project Status

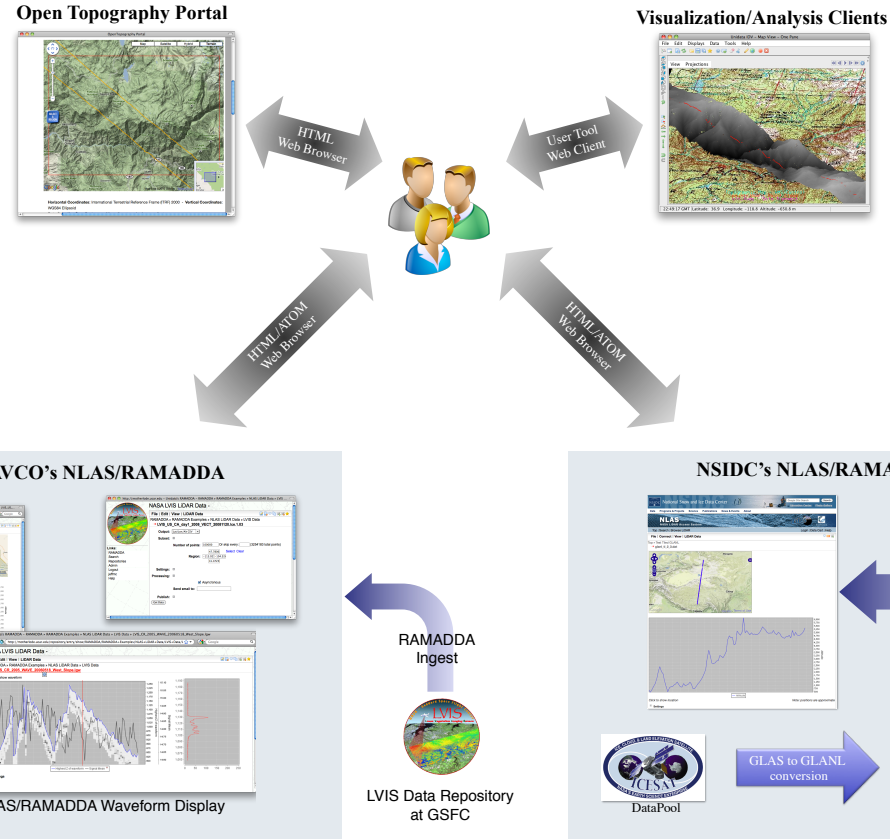
- Reformatted ICESat data with added QC in beta version
- Select ICESat and LVIS datasets now available through beta version of NLAS OpenTopography:

  http://opentopography.org/beta
- Support for full waveform LVIS data available through RAMADDA
- Full alignment with ESIP ATOM Discovery Cast being studied
- Project end – July 2012

Issues and Challenges

- Designing tools and visualizations for the vast range of point densities and footprint sizes
- Finding suitable standard encoding for LVIS and GLAS waveform data

INTEROPERABLE ACCESS TO DISTRIBUTED LIDAR DATA SOURCES USING WEB SERVICES AND OPEN STANDARDS



Deployment and Operations

OpenTopography is supported by multiple projects and its operations will be sustained for at least 5 years.
RAMADDA is an Open Source project with community support. The NLAS plug-ins developed for this project will be maintained by UNAVCO in the near-term.
RAMADDA's long-term integration into NSIDC's infrastructure is currently under study.
Anyone wishing to explore the reuse of the technologies developed under this project are encouraged to contact any of the CO-I's: Chaitan Baru baru@sdsc.edu; Charles Meertens meertens@unavco.org or Siri-Jodha Khalsa sjsk@nsidc.org